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PARASITOID RECORDS FOR *EUPLOEA CORE CORINNA* (W. S. MACLEAY) (LEPIDOPTERA: NYMPHALIDAE) IN SOUTH-EASTERN QUEENSLAND

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Abstract

Larvae of *Euploea core corinna* were sampled from *Nerium oleander* and *Parsonsia straminea*; both are common food plants in the Brisbane region. A higher percentage of larvae collected from oleander were parasitied (61%) compared to *P. straminea* (7%). Three species of parasites were reared out: two tachinids, *Paradrino laevicula* Mesnil and *Winthemia neowinthemioides* (Townsend), and a chalcid, *Brachymeria lasus* (Walker). The latter was recorded from *E. core corinna* for the first time.

Introduction

Many factors influence the population dynamics of butterflies (Ehrlich 1984) although the role of parasitoids in terms of regulation remains controversial (Dempster 1984). As part of our studies of the population biology of the common crow butterfly, *Euploea core corinna* (W. S. Macleay) (Rahman *et al.* 1985; Scheerymeyer & Zalucki 1985; Daghli *et al.* 1985) we investigated the effect of two larval food plants on levels of parasitism in this species. In the Brisbane region the introduced *Nerium oleander* and the native vine, *Parsonsia straminea*, (both Apocynaceae), are the major food plants of *E. core*. Here we report on the overall levels of parasitism recorded on these plants and the parasitoids reared out.

Materials and Methods

Euploea larvae were collected from 150 oleander plants growing in and around the University of Queensland campus during January 1983 and 21 *P. straminea* plants growing at Griffith University (GU) during January and March 1983. The larvae were individually reared in plastic cups (600 ml capacity) in a constant temperature room ($25 \pm 2^\circ\text{C}$, 70% RH) and supplied daily with fresh leaves of the host on which they were collected. The leaves were rinsed thoroughly in a weak (2%) sodium hypochlorite solution, followed by a weak detergent wash and several rinses in water to prevent introducing

parasitoid eggs and/or diseases. All parasitoid adults reared from larvae and pupae were identified to species level by Miss M. Schneider (University of Queensland) and Mr B. K. Cantrell (Queensland DPI). Voucher specimens were lodged in the Entomology Department Museum (University of Queensland). Any larvae that died for no apparent reason were dissected and checked for parasitoid larvae.

Results and Discussion

A total of 107 larvae were collected from oleander and 29 from *P. straminea* and of these 61% and 7% respectively were parasitised. Although the sample size on *P. straminea* was small the differences in levels of parasitism were significant ($\chi^2 = 25.269$, $P < 0.001$, Table 1). The percentage parasitised increased with larval instar (Table 2). A small percentage (6%) of first instars on oleander were parasitised. The percent parasitised jumped to 60-70% in the second and third instars and remained high (ca 90%) in the fourth and fifth instars on oleander (Table 2). Only 2 larvae (both fifth instars) on *P. straminea* were parasitised (Table 2). Comparisons of overall parasitism levels (above) may be misleading due to: (1) the different age distributions of larvae on the two plant species (Table 2); and (2) the pattern of parasitism among instars. Comparing the 2 hosts for percent parasitism of fifth instars, the level on oleander is higher ($\chi^2 = 4.711$, $P < 0.05$). The differences in levels of parasitism are due either to host plant effects on searching parasitoids *per se* (that is, parasitoids avoid *P. straminea* or find oleander 'attractive' for searching), or to habitat effects on parasitoids (that

TABLE 1
Number of *Euploea* larvae parasitised, eclosed successfully to adult and died from unknown causes collected from *Nerium oleander* and *Parsonsia straminea*.

Larval condition	<i>Nerium oleander</i>		<i>Parsonsia straminea</i>	
	No.	%	No.	%
Parasitised	65	61	2	7
Eclosed	21	20	16	55
Died (cause unknown)	21	20	11	38
Total	107		29	

TABLE 2
Breakdown of parasitism rates in *Euploea* larvae by instar collected from *Nerium oleander* and *Parsonsia straminea*

Larval instar at collection	No. collected	% parasitised	No. collected	% parasitised
I	17	6	14	0
II	32	60	7	0
III	24	70	2	0
IV	15	87	1	0
V	19	89	5	40
Total	107		29	

is, parasitoids are at a very low density at the GU site). The collections from *P. straminea* were made at Griffith University, which is set in a patch of sclerophyll forest. The oleander collections were made in suburban gardens. Experiments to test these hypotheses have been done and will be reported elsewhere.

The predominant parasitoid recorded in this study was *Paradrino laevicula* Mesnil (Diptera: Tachinidae). This parasitoid was recorded from larvae and pupae collected as larvae from both oleander and *P. straminea*. Out of a total of 136 larvae, 67 were parasitised by tachinids (as judged by the presence of maggots and/or emergence of adult flies). Tachinids emerged from 38 larvae and pupae and *P. laevicula* emerged from 37 of these. Parasitised larvae contained on average 2.4 tachinids (range 1-7). Out of 93 tachinid adults emerging from *Euploea*, 88 were *P. laevicula* (37 ♂♂ and 49 ♀♀). The remaining 5 were *Winthemia neowinthemioides* (Townsend). These were reared solely from *Euploea* collected from oleander. In one instance a *P. laevicula* and a *W. neowinthemioides* emerged from one *Euploea* pupa. Crosskey (1973) also records both these tachinids from *Euploea core*. One *E. core* pupa collected from an oleander plant produced a specimen of *Brachymeria lasus* (Walker) (Hymenoptera: Chalcididae). This is a polyphagous parasitoid having been recorded from over 100 hosts (Habu 1960), but not previously from *E. core*. It probably attacks the prepupal stage of its hosts and, as this and the pupal stage are often difficult to sample, the incidence of this species is probably greatly underestimated.

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